IBC-2
IRC-8

Log # 10-11
(for office use only)

WASHINGTON STATE BUILDING CODE COUNCIL

APPLICATION FOR REVIEW OF A PROPOSED STATEWIDE AMENDMENT TO THE WASHINGTON STATE BUILDING CODE

1. State Building Code to be Amended.

- [X] International Building Code
- [X] International Residential Code
- [ ] ICC ANSI A117.1 Accessibility Code
- [ ] International Fire Code
- [ ] Uniform Plumbing Code
- [ ] State Energy Code
- [ ] Ventilation and Indoor Air Quality Code
- [ ] International Mechanical Code
- [ ] International Fuel Gas Code
- [ ] NFPA 54 National Fuel Gas Code
- [ ] NFPA 58 Liquefied Petroleum Gas Code

IBC 2009 (New Section) 1511 **Page** 301 **Also: IRC 2009 (New Section)** 908 **Page** 444

2. Applicant:

Ed Golden

3. Signed:

Ed Golden -Convenient Safety Systems, Inc.
President –Agility Restoration Services, Inc.
Proponent Title Date February 21, 2010

4. Contact Person:

President, Agility Restoration Services

Ed Golden	President, Agility Restoration Services
Name	**Title**

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5. **Proposed Code Amendment** (Underline all added words, strike through deleted words) Additional pages may be attached.

Code International Building Code (2009) **Section** 1511 **Page** 301

(New Section) 1511 Roof Access Safety Mechanism.

There shall be a permanently installed roof access safety mechanism to which all persons accessing inclined roof surfaces are attached in compliance with WAC 296.24510-24515, which provides continuous fall restraint protection during both ascent and descent between roof edge or other access point and roof ridge or highpoint.

(See: Cited WAC Sections, Attachment #1)

Code International Residential Code (2009) **Section** 908 **Page** 444

(New Section) 908 Roof Access Safety Mechanism.

There shall be a permanently installed roof access safety mechanism to which all persons accessing inclined roof surfaces are attached in compliance with WAC 296.24510-24515, which provides continuous fall restraint protection during both ascent and descent between roof edge or other access point and roof ridge or highpoint.

(See: Cited WAC Sections, Attachment #1)

6. Background information on amendment.

NOTE: State-wide and emergency state-wide amendments to the state building code should be based on one of the following criteria:

(1) The amendment is needed to address a critical life/safety need.
(2) The amendment is needed to address a specific state policy or statute.
(3) The amendment is needed for consistency with state or federal regulations.
(4) The amendment is needed to address a unique character of the state.
(5) The amendment corrects errors and omissions.

The proposed identical additions to the 2009 IBC (New Section - 1511) and 2009 IRC (New Section – 908) are necessary to address a critical life/safety need.

Code changes requiring the installation of a Rooftop Access Safety Mechanism are necessary to prevent falls from height sustained by persons ascending and descending inclined roof surfaces, in order to eliminate or significantly reduce exposure to catastrophic injuries and the resulting high medical costs, personal and industrial injury claims, third party lawsuits, lost income and other related damages.

These specific code additions will benefit all persons accessing inclined roof surfaces during initial construction and subsequent rooftop installations, inspections, maintenance and repair. All persons - including not only workers covered under existing Labor & Industries Fall Restraint and Fall Arrest standards, but actual homeowners, inspectors, adjusters, repair personnel and others as well - will gain safe access to inclined roof structures under all circumstances.

The cost savings to be realized by the State of Washington alone as a result of reduced Workers' Compensation claims will be substantial, with particular importance during difficult budgetary cycles. Utilizing data (*see below) compiled by the Washington State Dept. of Labor and Industries itself for Workers' Compensation claims filed between 2003-2007, Washington State paid over forty two million dollars ($42,000,000) to claimants as a result of falls from height. Adding the cost of preventable injuries sustained by homeowners and other third parties who will be protected by a Roof Access Safety Mechanism, the total savings will be even more substantial.

***Washington Numbers (Falls from Height)**

>For injury years 2003-2007
>5 Fatalities
>13 Total Permanent Disability Cases
>270 Partial Permanent Disability Cases
>284 Time Loss Cases
>361 Medical Aid Only Cases
>TOTAL COSTS: $42.5 Million!!!

Source: WA Dept. of Labor & Industries records request
No. 67215 November 26, 2008

INSTRUCTIONS

1. Check the code or codes for which amendments are being proposed.

2. Provide the name of the local government, organization, or individual proposing the code change.

3. Provide the name, address, and phone number of the contact person designated to work with the Council and staff to supply information on the proposed changes as needed.

4. The specific section for which an amendment is proposed should be listed. The **entire section** should be reproduced, including the proposed amendatory language.

   All added words should be underlined, all deleted words should be struck through. Any separate new sections added should be inserted in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code, additional pages may be attached.

5. Provide background information on the code amendment to include need or reason for the amendment, as well as any other information appropriate to assist the Council in a clear understanding of the issue.

6. **REQUIRED FOR ALL STATEWIDE AMENDMENT REQUESTS:** Complete the attached Economic Impact Worksheet (using the worksheet instructions provided) and include it with your statewide amendment request. The worksheet will be forwarded to the Council as part of the amendment's documentation. TAG findings and projections from the worksheet will be tabulated to summarize projected benefits and impacts and will be included with TAG comments and recommendations.

7. Mail the completed application to:

   State Building Code Council
   Post Office Box 42525
   Olympia, Washington 98504-2525
   Phone: (360) 725-2967

NOTE: REPRODUCE THIS FORM AND ADD ADDITIONAL PAGES AS NEEDED.

Log # 10-11
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Economic Impact Worksheet
(Required for statewide amendment requests. Attach supporting documentation.)

Code References: IBC 1511 (New Section) Title: Roof Access Safety Mechanism
IRC 908 (New Section) Title: Roof Access Safety Mechanism

Proponent: Ed Golden Phone: 206 714 9713 Date: February 21, 2010

Part I ❖ Amendment Benefit:

PROBLEM(S) ADDRESSED: Roof Access Safety – To reduce if not eliminate rooftop falls sustained by persons ascending and descending inclined roof structures, thereby preventing catastrophic falls from height and the resulting medical costs, lost income and productivity, industrial injury claims and third party lawsuits associated therewith.

PRIMARY REASON FOR AMENDMENT: (check one only)

X Protect public health, safety and welfare
Reduce cost
"Manage risk" for government
☐ Mandate from legislation or courts
☐ Code change
☐ Other _____

TYPE OF BENEFITS PROJECTED: (check all that apply)

X Saves lives/reduces injuries
X Protects/improves long-term health
Reduces construction cost:
☐ Over existing code requirement
☐ Canceling new code requirement
☐ Off-setting new code requirement
☐ Increases construction alternatives
☐ Saves energy
☐ Protects environment
X Increases accessibility
☐ Reduces regulation
☐ Reduces government enforcement cost
☐ Clarifies/improves existing code
X Protects property loss/damage
☐ Other _____

Part II ❖ Amendment Impacts:

TYPES OF CONSTRUCTION: X New Construction X Remodeling/Tenant Improvement/Repair

COMPLETE TABLE FOR EACH BUILDING TYPE CHECKED (See reverse for instruction on items [a] through [e])

√	Building Type	Construction[a] 1st Cost		Enforcement[b]		Owner[c] Ongoing		Other		Supporting data attached
	Residential	C/S[d]	Degree[e]	C/S[d]	Degree[e]	C/S[d]	Degree[e]	C/S[d]	Degree[e]	✓
X	Single family	+	1-2	+	1	1	0			
X	Multi-family	+	1-2	+	1	1	0			
X	Commercial/Retail	+	1-2	+	1	1	0			
X	Industrial	+	1-2	+	1	1	0			
X	Government/Utilities	+	1-2	+	1	1	0			
	Other:									

OTHER EFFECTS:

Evaluate by number scale 0-3 (0=none, 3=significant)
__0_ Likelihood for litigation
__0 Decrease public cooperation
__0 Disadvantage small business
__0_Other _____

Evaluate by letter code
(Spec, Custom, Factory, Remodel, Manufact., Other, NA)
NA Advantage one industry
NA Disadvantage one industry

Part III ❖ Comments and Recommendations:

Evaluate each by number scale 0-3 (0=none, 3=significant)
_0__ Difficulty to Enforce
_0__ Costs exceed Benefits
_3__ C/S Confidence level
_3__ Cost of not adopting amendment
_0__ Degree of TAG controversy

Evaluate Yes or No (circle one)
(Y) / N Were alternative solutions considered
(Y) / N Recommend further benefit/impact analysis
(Y) / N Recommend future benefit/impact review

unprotected sides and edges including, the leading edge of a low pitched roof or walking/working surface.

Self retracting lifeline means a deceleration device which contains a drum wound line which may be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which after onset of a fall, automatically locks the drum and arrests the fall.

Shock absorbing lanyard means a flexible line of webbing, cable, or rope used to secure a body belt or harness to a lifeline or anchorage point that has an integral shock absorber.

Single action snap hook means a connecting snap hook that requires a single force to open the gate which automatically closes when released.

Snap hook means a self-closing connecting device with a gatekeeper latch or similar arrangement that will remain closed until manually opened. This includes single action snap hooks that open when the gatekeeper is depressed and double action snap hooks that require a second action on a gatekeeper before the gate can be opened.

Static line - see horizontal lifeline.

Strength member means any component of a fall protection system that could be subject to loading in the event of a fall.

Steep roof means a roof having a slope greater than 4 in 12.

Unprotected sides and edges means any side or edge (except at entrances to points of access) of a floor, roof, ramp or runway where there is no wall or guardrail system as defined in WAC 296-155-505(7).

Walking/working surface means for the purpose of this section, any area whose dimensions are forty-five inches or greater in all directions, through which workers pass or conduct work.

Warning line system means a barrier erected on a walking and working surface or a low pitch roof (4 in 12 or less), to warn employees that they are approaching an unprotected fall hazard(s).

Work area means that portion of a walking/working surface where job duties are being performed.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-14-058, § 296-155-24503, filed 7/3/00, effective 10/1/00. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-24-051, § 296-155-24503, filed 11/27/96, effective 2/1/97. Statutory Authority: Chapter 49.17 RCW. 95-10-016, § 296-155-24503, filed 4/25/95, effective 10/1/95; 91-03-044 (Order 90-18), § 296-155-24503, filed 1/10/91, effective 2/12/91.]

WAC 296-155-24505 Fall protection work plan. (1) The employer shall develop and implement a written fall protection work plan including each area of the work place where the employees are assigned and where fall hazards of 10 feet or more exist.

(2) The fall protection work plan shall:

(a) Identify all fall hazards in the work area.

(b) Describe the method of fall arrest or fall restraint to be provided.

(c) Describe the correct procedures for the assembly, maintenance, inspection, and disassembly of the fall protection system to be used.

(d) Describe the correct procedures for the handling, storage, and securing of tools and materials.

(e) Describe the method of providing overhead protection for workers who may be in, or pass through the area below the work site.

(f) Describe the method for prompt, safe removal of injured workers.

(g) Be available on the job site for inspection by the department.

(3) Prior to permitting employees into areas where fall hazards exist the employer shall:

(a) Ensure that employees are trained and instructed in the items described in subsection (2)(a) through (f) of this section.

(b) Inspect fall protection devices and systems to ensure compliance with WAC 296-155-24510.

(4) Training of employees:

(a) The employer shall ensure that employees are trained as required by this section. Training shall be documented and shall be available on the job site.

(b) "Retraining." When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by subsection (1) of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

- Changes in the workplace render previous training obsolete; or
- Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or
- Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

Note: The following appendices to Part C-1 of this chapter serve as nonmandatory guidelines to assist employers in complying with the appropriate requirements of Part C-1 of this chapter.

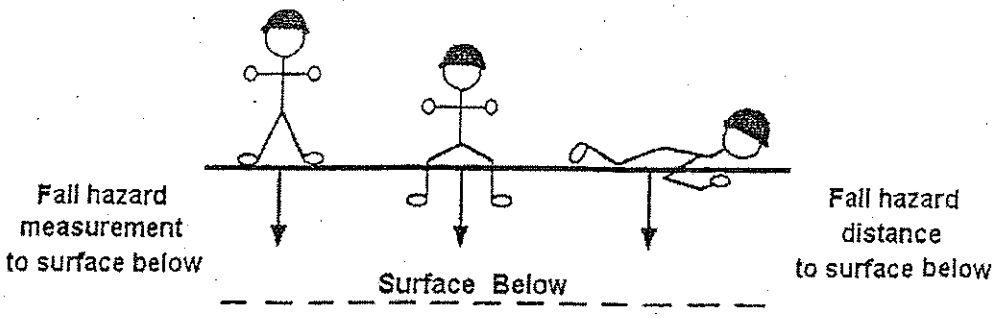
[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-14-058, § 296-155-24505, filed 7/3/00, effective 10/1/00. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-24-051, § 296-155-24505, filed 11/27/96, effective 2/1/97. Statutory Authority: Chapter 49.17 RCW. 95-10-016, § 296-155-24505, filed 4/25/95, effective 10/1/95; 91-03-044 (Order 90-18), § 296-155-24505, filed 1/10/91, effective 2/12/91.]

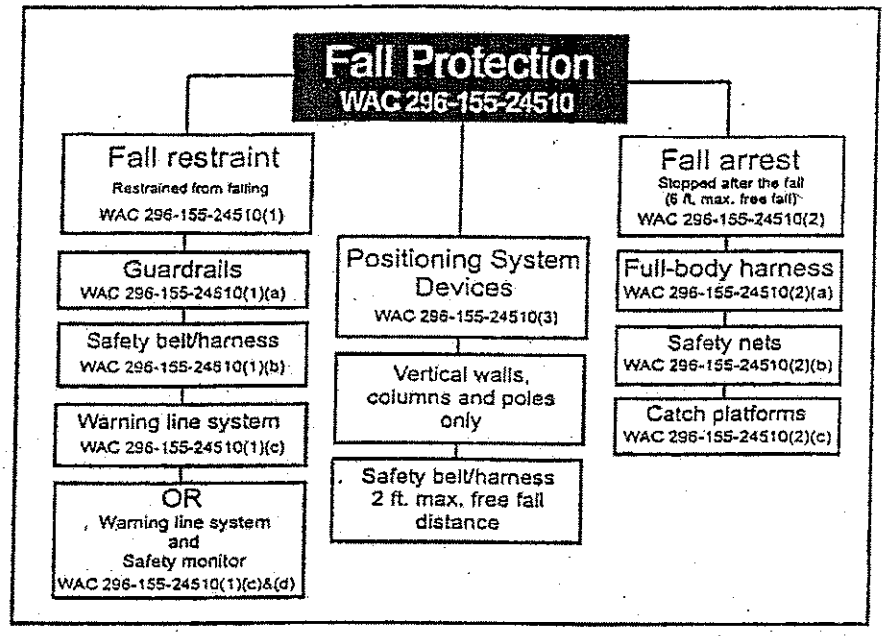
WAC 296-155-24507 Reserve.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-24-051, § 296-155-24507, filed 11/27/96, effective 2/1/97. Statutory Authority: Chapter 49.17 RCW. 95-10-016, § 296-155-24507, filed 4/25/95, effective 10/1/95.]

WAC 296-155-24510 Fall restraint, fall arrest systems. When employees are exposed to a hazard of falling from a location ten feet or more in height, the employer shall ensure that fall restraint, fall arrest systems or positioning device systems are provided, installed, and implemented according to the following requirements.

ATTACHMENT 1 V5





(1) Fall restraint protection shall consist of:

(a) Standard guardrails as described in chapter 296-155 WAC, Part K.

(b) Safety belts and/or harness attached to securely rigged restraint lines.

(i) Safety belts and/or harness shall conform to ANSI Standard:

Class I body belt

Class II chest harness

Class III full body harness

Class IV suspension/position belt

(ii) All safety belt and lanyard hardware assemblies shall be capable of withstanding a tensile loading of 4,000 pounds without cracking, breaking, or taking a permanent deformation.

(iii) Rope grab devices are prohibited for fall restraint applications unless they are part of a fall restraint system designed specifically for the purpose by the manufacturer, and used in strict accordance with the manufacturer's recommendations and instructions.

(iv) The employer shall ensure component compatibility.

(v) Components of fall restraint systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration, and defective components shall be removed from service if their function or strength have been adversely affected.

(vi) Anchorage points used for fall restraint shall be capable of supporting 4 times the intended load.

(vii) Restraint protection shall be rigged to allow the movement of employees only as far as the sides and edges of the walking/working surface.

(c) A warning line system as prescribed in WAC 296-155-24515(3) and supplemented by the use of a safety monitor system as prescribed in WAC 296-155-24521 to protect workers engaged in duties between the forward edge of the warning line and the unprotected sides and edges, including the leading edge, of a low pitched roof or walking/working surface.

(d) Warning line and safety monitor systems as described in WAC 296-155-24515 (3) through (4)(f) and 296-155-24520 respectively are prohibited on surfaces exceeding a 4 in 12 pitch, and on any surface whose dimensions are less than forty-five inches in all directions.

(2) Fall arrest protection shall consist of:

(a) Full body harness system.

(i) An approved Class III full body harness shall be used.

(ii) Body harness systems or components subject to impact loading shall be immediately removed from service and shall not be used again for employee protection unless

inspected and determined by a competent person to be undamaged and suitable for reuse.

(iii) All safety lines and lanyards shall be protected against being cut or abraded.

(iv) The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head.

(v) Body harness systems shall be rigged to minimize free fall distance with a maximum free fall distance allowed of 6 feet, and such that the employee will not contact any lower level.

(vi) Hardware shall be drop forged, pressed or formed steel, or made of materials equivalent in strength.

(vii) Hardware shall have a corrosion resistant finish, and all surfaces and edges shall be smooth to prevent damage to the attached body harness or lanyard.

(viii) When vertical lifelines (droplines) are used, not more than one employee shall be attached to any one lifeline.

Note: The system strength needs in the following items are based on a total combined weight of employee and tools of no more than 310 pounds. If combined weight is more than 310 pounds, appropriate allowances must be made or the system will not be deemed to be in compliance.

(ix) Full body harness systems shall be secured to anchorages capable of supporting 5,000 pounds per employee except: When self retracting lifelines or other deceleration devices are used which limit free fall to two feet, anchorages shall be capable of withstanding 3,000 pounds.

(x) Vertical lifelines (droplines) shall have a minimum tensile strength of 5,000 pounds (22.2 kN), except that self retracting lifelines and lanyards which automatically limit free fall distance to two feet (.61 m) or less shall have a minimum tensile strength of 3,000 pounds (13.3 kN).

(xi) Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

(xii) Lanyards shall have a minimum tensile strength of 5,000 pounds (22.2 kN).

(xiii) All components of body harness systems whose strength is not otherwise specified in this subsection shall be capable of supporting a minimum fall impact load of 5,000 pounds (22.2 kN) applied at the lanyard point of connection.

(xiv) Dee-rings and snap-hooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or taking permanent deformation.

(xv) Snap-hooks shall be a locking type snap-hook designed and used to prevent disengagement of the snap-hook by the contact of the snap-hook keeper by the connected member.

(xvi) Unless the snap-hook is designed for the following connections, snap-hooks shall not be engaged:

(A) Directly to webbing, rope or wire rope;

(B) To each other;

(C) To a dee-ring to which another snap-hook or other connector is attached;

(D) To a horizontal lifeline; or

(E) To any object which is incompatibly shaped or dimensioned in relation to the snap-hook such that unintentional disengagement could occur by the connected object being able to depress the snap-hook keeper and release itself.

(xvii) Full body harness systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration, and defective components shall be removed from service if their function or strength have been adversely affected.

(b) Safety net systems. Safety net systems and their use shall comply with the following provisions:

(i) Safety nets shall be installed as close as practicable under the surface on which employees are working, but in no case more than thirty feet (9.1 m) below such level unless specifically approved in writing by the manufacturer. The potential fall area to the net shall be unobstructed.

(ii) Safety nets shall extend outward from the outermost projection of the work surface as follows:

Vertical distance from working level to horizontal plane of net	Minimum required horizontal distance of outer edge of net from the edge of the working surface
Up to 5 feet	8 feet
More than 5 feet up to 10 feet	10 feet
More than 10 feet	13 feet

(iii) Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test specified in (b)(iv) of this subsection.

(iv) Safety nets and their installations shall be capable of absorbing an impact force equal to that produced by the drop test specified in (b)(iv)(A) and (B) of this subsection.

(A) Except as provided in (b)(iv)(B) of this subsection, safety nets and safety net installations shall be drop-tested at the job site after initial installation and before being used as a fall protection system, whenever relocated, after major repair, and at 6-month intervals if left in one place. The drop-test shall consist of a 400 pound (180 kg) bag of sand 30 ± 2 inches (76 ± 5 cm) in diameter dropped into the net from the highest walking/working surface at which employees are exposed to fall hazards, but not from less than forty-two inches (1.1 m) above that level.

(B) When the employer can demonstrate that it is unreasonable to perform the drop-test required by (b)(iv)(A) of this subsection, the employer (or a designated competent person) shall certify that the net and net installation is in compliance with the provisions of (b)(iii) and (b)(iv)(A) of this subsection by preparing a certification record prior to the net being used as a fall protection system. The certification record must include an identification of the net and net installation for which the certification record is being prepared; the date that it was determined that the identified net and net installation were in compliance with (b)(iii) of this subsection and the signature of the person making the determination and certification. The most recent certification record for each net and net installation shall be available at the job site for inspection.

(v) Defective nets shall not be used. Safety nets shall be inspected at least once a week for wear, damage, and other deterioration. Defective components shall be removed from service. Safety nets shall also be inspected after any occurrence which could affect the integrity of the safety net system.

(vi) Materials, scrap pieces, equipment, and tools which have fallen into the safety net shall be removed as soon as possible from the net and at least before the next work shift.

(vii) The maximum size of each safety net mesh opening shall not exceed 36 square inches (230 cm^2) nor be longer than 6 inches (15 cm) on any side, and the opening, measured center-to-center of mesh ropes or webbing, shall not be longer than 6 inches (15 cm). All mesh crossings shall be secured to prevent enlargement of the mesh opening.

(viii) Each safety net (or section of it) shall have a border rope for webbing with a minimum breaking strength of 5,000 pounds (22.2 kN).

(ix) Connections between safety net panels shall be as strong as integral net components and shall be spaced not more than 6 inches (15 cm) apart.

(c) Catch platforms.

(i) A catch platform shall be installed within 10 vertical feet of the work area.

(ii) The catch platforms width shall equal the distance of the fall but shall be a minimum of 45 inches wide and shall be equipped with standard guardrails on all open sides.

(3) Positioning device systems. Positioning device systems and their use shall conform to the following provisions:

(a) Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet (.61 m).

(b) Positioning devices shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds (13.3 kN), whichever is greater.

(c) Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials.

(d) Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of this system.

(e) Connecting assemblies shall have a minimum tensile strength of 5,000 pounds (22.2 kN).

(f) Dee-rings and snap-hooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or taking permanent deformation.

(g) Snap-hooks shall be a locking type snap-hook designed and used to prevent disengagement of the snap-hook by the contact of the snap-hook keeper by the connected member.

(h) Unless the snap-hook is designed for the following connections, snap-hooks shall not be engaged:

(i) Directly to webbing, rope or wire rope;

(ii) To each other;

(iii) To a dee-ring to which another snap-hook or other connector is attached;

(iv) To a horizontal lifeline; or

(v) To any object which is incompatibly shaped or dimensioned in relation to the snap-hook such that unintentional disengagement could occur by the connected object being able to depress the snap-hook keeper and release itself.

(i) Positioning device systems shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be removed from service.

(j) Body belts, harnesses, and components shall be used only for employee protection (as part of a personal fall arrest system or positioning device system) and not to hoist materials.

(4) Droplines or lifelines used on rock scaling operations, or in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum of 7/8 inch wire core manila rope. For all other lifeline applications, a minimum of 3/4 inch manila or equivalent, with a minimum breaking strength of 5,000 pounds, shall be used.

(5) Safety harnesses, lanyards, lifelines or droplines, independently attached or attended, shall be used while performing the following types of work when other equivalent type protection is not provided:

(a) Work performed in permit required confined spaces and other confined spaces shall follow the procedures as described in chapter 296-62 WAC, Part M.

(b) Work on hazardous slopes, or dismantling safety nets, working on poles or from boatswains chairs at elevations greater than six feet (1.83 m), swinging scaffolds or other unguarded locations.

(c) Work on skips and platforms used in shafts by crews when the skip or cage does not occlude the opening to within one foot (30.5 cm) of the sides of the shaft, unless cages are provided.

(6) Canopies, when used as falling object protection, shall be strong enough to prevent collapse and to prevent penetration by any objects which may fall onto the canopy.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-14-058, § 296-155-24510, filed 7/3/00, effective 10/1/00. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-24-051, § 296-155-24510, filed 11/27/96, effective 2/1/97. Statutory Authority: Chapter 49.17 RCW. 95-10-016, § 296-155-24510, filed 4/25/95, effective 10/1/95; 95-04-007, § 296-155-24510, filed 1/18/95, effective 3/1/95; 93-19-142 (Order 93-04), § 296-155-24510, filed 9/22/93, effective 11/1/93; 91-24-017 (Order 91-07), § 296-155-24510, filed 11/22/91, effective 12/24/91; 91-03-044 (Order 90-18), § 296-155-24510, filed 1/10/91, effective 2/12/91.]

WAC 296-155-24515 Guarding of low pitched roof perimeters. (1) General provisions. During the performance of work on low pitched roofs with a potential fall hazard greater than ten feet, the employer shall ensure that employees engaged in such work be protected from falling from all unprotected sides and edges of the roof as follows:

(a) By the use of a fall restraint or fall arrest systems, as defined in WAC 296-155-24510; or

(b) By the use of a warning line system erected and maintained as provided in subsection (3) of this section and supplemented for employees working between the warning line and the roof edge by the use of a safety monitor system as described in WAC 296-155-24521.

(c) Mechanical equipment shall be used or stored only in areas where employees are protected by a warning line system, or fall restraint, or fall arrest systems as described in WAC 296-155-24510. Mechanical equipment may not be used or stored where the only protection is provided by the use of a safety monitor.

(2) Exceptions.

(a) The provisions of subsection (1)(a) of this section do not apply at points of access such as stairways, ladders, and ramps, or when employees are on the roof only to inspect, investigate, or estimate roof level conditions. Roof edge materials handling areas and materials storage areas shall be guarded as provided in subsection (4) of this section.

(b) Employees engaged in roofing on low-pitched roofs less than fifty feet wide, may elect to use a safety monitor system without warning lines.

4/5

Note: See Appendix A to Part C-1—Determining roof widths nonmandatory guidelines for complying with WAC 296-155-24515 (2)(b).

(3) Warning lines systems.

(a) Warning lines shall be erected around all sides of the work area.

(i) When mechanical equipment is not being used, the warning line shall be erected not less than six feet (1.8 meters) from the edge of the roof.

(ii) When mechanical equipment is being used, the warning line shall be erected not less than six feet (1.8 meters) from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than ten feet (3.1 meters) from the roof edge which is perpendicular to the direction of mechanical equipment operation.

(b) The warning line shall consist of a rope, wire, or chain and supporting stanchions erected as follows:

(i) The rope, wire, or chain shall be flagged at not more than six foot (1.8 meter) intervals with high visibility material.

(ii) The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 36 inches (91.4 cm) from the roof surface and its highest point is no more than 42 inches (106.7 cm) from the roof surface.

(iii) After being erected, with the rope, wire or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds (71 Newtons) applied horizontally against the stanchion, thirty inches (0.76 meters) above the roof surface, perpendicular to the warning line, and in the direction of the roof edge.

(iv) The rope, wire, or chain shall have a minimum tensile strength of 200 pounds (90 kilograms), and after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions.

(v) The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

(c) Access paths shall be erected as follows:

(i) Points of access, materials handling areas, and storage areas shall be connected to the work area by a clear access path formed by two warning lines.

(ii) When the path to a point of access is not in use, a rope, wire, or chain, equal in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area.

(4) Roof edge materials handling areas and materials storage. Employees working in a roof edge materials handling or materials storage area located on a low pitched roof with a ground to eave height greater than ten feet shall be protected from falling along all unprotected roof sides and edges of the area.

(a) When guardrails are used at hoisting areas, a minimum of four feet of guardrail shall be erected on each side of the access point through which materials are hoisted.

(b) A chain or gate shall be placed across the opening between the guardrail sections when hoisting operations are not taking place.

(c) When guardrails are used at bitumen pipe o minimum of four feet of guardrail shall be erected c side of the pipe.

(d) When safety belt/harness systems are used, the not be attached to the hoist.

(e) When fall restraint systems are used, they s rigged to allow the movement of employees only as fa roof edge.

(f) Materials shall not be stored within six feet of t edge unless guardrails are erected at the roof edge.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].05C 058, § 296-155-24515, filed 7/3/00, effective 10/1/00. Statutory A RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-24-051, § 296-155 filed 11/27/96, effective 2/1/97. Statutory Authority: Chapter 49.1 95-10-016, § 296-155-24515, filed 4/25/95, effective 10/1/95; 91 (Order 91-07), § 296-155-24515, filed 11/22/91, effective 12/24/91 044 (Order 90-18), § 296-155-24515, filed 1/10/91, effective 2/12/9

WAC 296-155-24519 Reserve.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 051, § 296-155-24519, filed 11/27/96, effective 2/1/97. Statutory Au Chapter 49.17 RCW. 95-10-016, § 296-155-24519, filed 4/25/95, e 10/1/95.]

WAC 296-155-24520 Leading edge control zor When performing leading edge work, the employer ensure that a control zone be established according to t lowing requirements:

(a) The control zone shall begin a minimum of si back from the leading edge to prevent exposure by em ees who are not protected by fall restraint or fall arres tems.

(b) The control zone shall be separated from other of the low pitched roof or walking/working surface b erection of a warning line system.

(c) The warning line system shall consist of wire, or chain supported on stanchions, or a method which vides equivalent protection.

(d) The spacing of the stanchions and support of th shall be such that the lowest point of the line (including is not less than thirty-six inches from the walking/wo surface, and its highest point is not more than forty inches (106.7 cm) from the walking/working surface.

(e) Each line shall have a minimum tensile streng 200 pounds (90 kilograms).

(f) Each line shall be flagged or clearly marked with visibility materials at intervals not to exceed 6 feet.

(g) After being erected with the rope, or chain atta stanchions shall be capable of resisting without tipping a force of at least 16 pounds (71 Newtons) applied hor tally against the stanchions thirty inches (0.76 meters) a the roof surface, perpendicular to the warning line and i direction of the roof edge.

(2) When positive means of fall restraint as describ WAC 296-155-24510 (1)(a) through (d), or fall arre described in WAC 296-155-24510 (2) through (6) are no lized, a safety monitor system as described in WAC 296-24521 shall be implemented to protect employees wor between the forward edge of the warning line and the lea edge.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 0 058, § 296-155-24520, filed 7/3/00, effective 10/1/00. Statutory Auth